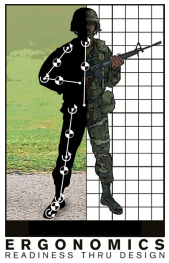
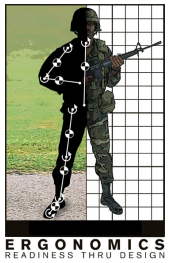
OFFICE ERGONOMICS



Office Ergonomics

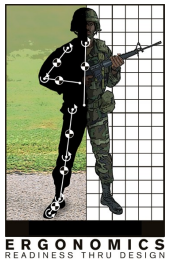
- What You Will Get Out of This Talk
- Recognize the risk factors for WMSDs that exist in the office
- Identify ways to reduce WMSD risk



Office Ergonomics

- What's the problem with sitting all day?

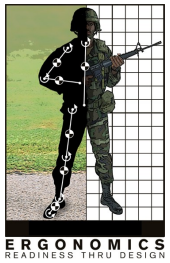
- Which WMSD risk factors exist in an office setting?



Office Ergonomics

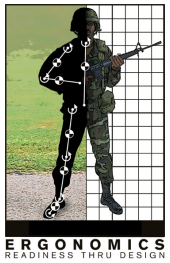
WMSD Risk Factors

- Posture/Position
- Force
- Duration
- Repetition
- Compression/Contact Stress



Office Ergonomics

- How many computers do you interact with?
  - Office
  - Home
  - Travel
- Duration exposure today in children



Office Ergonomics

- So, we are all at risk for WMSDs if we use computers
  - Carpal Tunnel Syndrome
  - Tendonitis
  - Back Pain

Office Ergonomics

Components

Office Ergonomics

Components

- The Desk

shown: personal desk in gunmetal w/silver frame

Office Ergonomics

Components

- Desk
- Dictates where work will occur
  - Adjustable
  - Non-adjustable

Office Ergonomics Components – Desk

Office Ergonomics

Components – Deskalators

Office Ergonomics

Components – Desk (Underneath)

Office Ergonomics

Components

- Chair

Office Ergonomics

Components

- Chair

Office Ergonomics

Components

- Chair

USACHPPM
Readiness thru Health

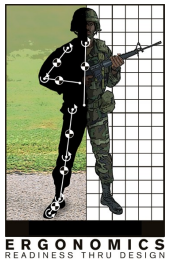
Office Ergonomics

Components

- Chair

Office Ergonomics

Components - Chair



Office Ergonomics

Chair Feature Checklist

- Seat Pan Height
- Seat Pan Slope
- Seat Back Height
- Seat Back Angle
- Lumbar Support
- Arm Rests
- Contouring
- Cushioning

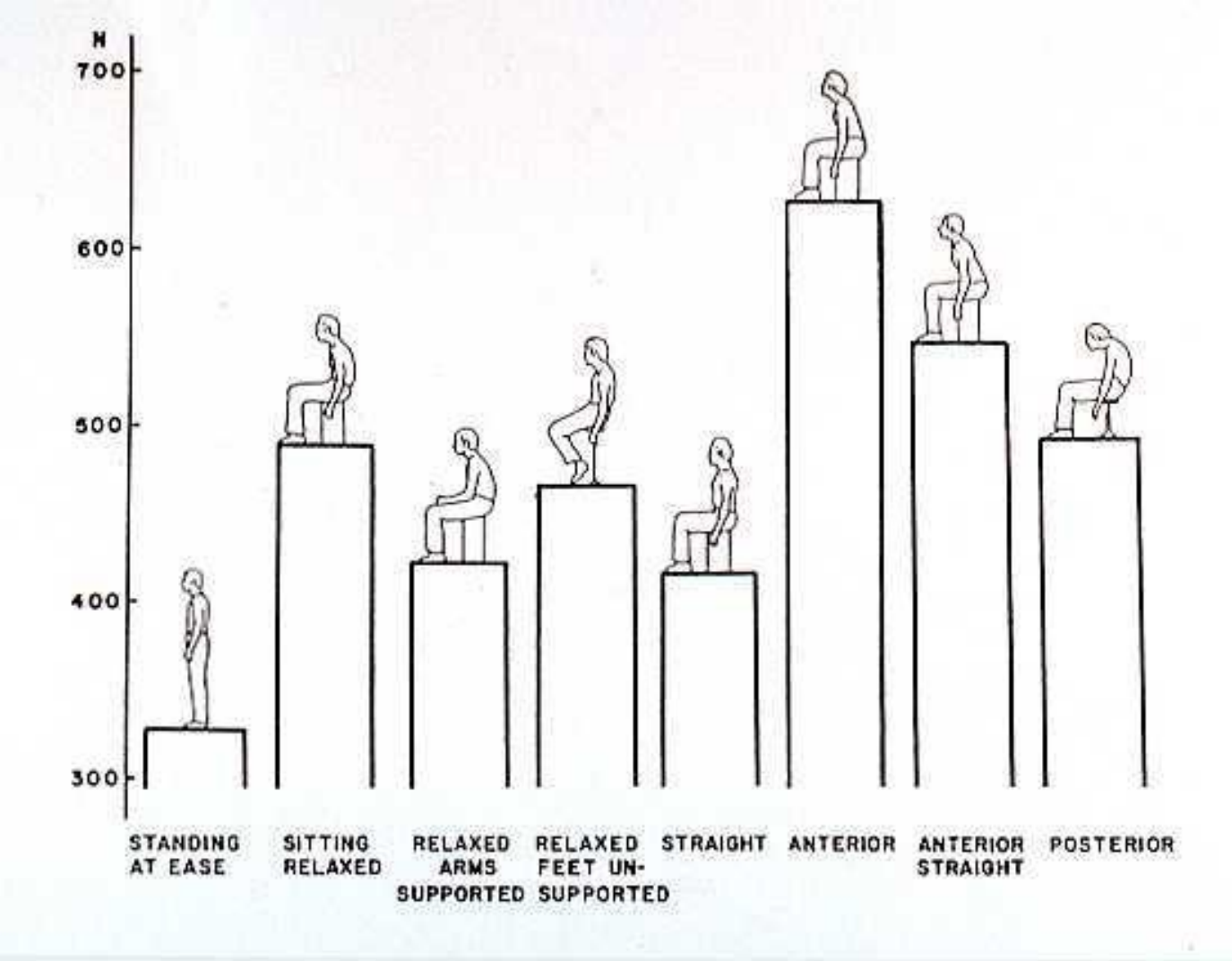
Office Ergonomics Components
- Adjustable Chair

Office Ergonomics

UNICOR Adjustable Chairs

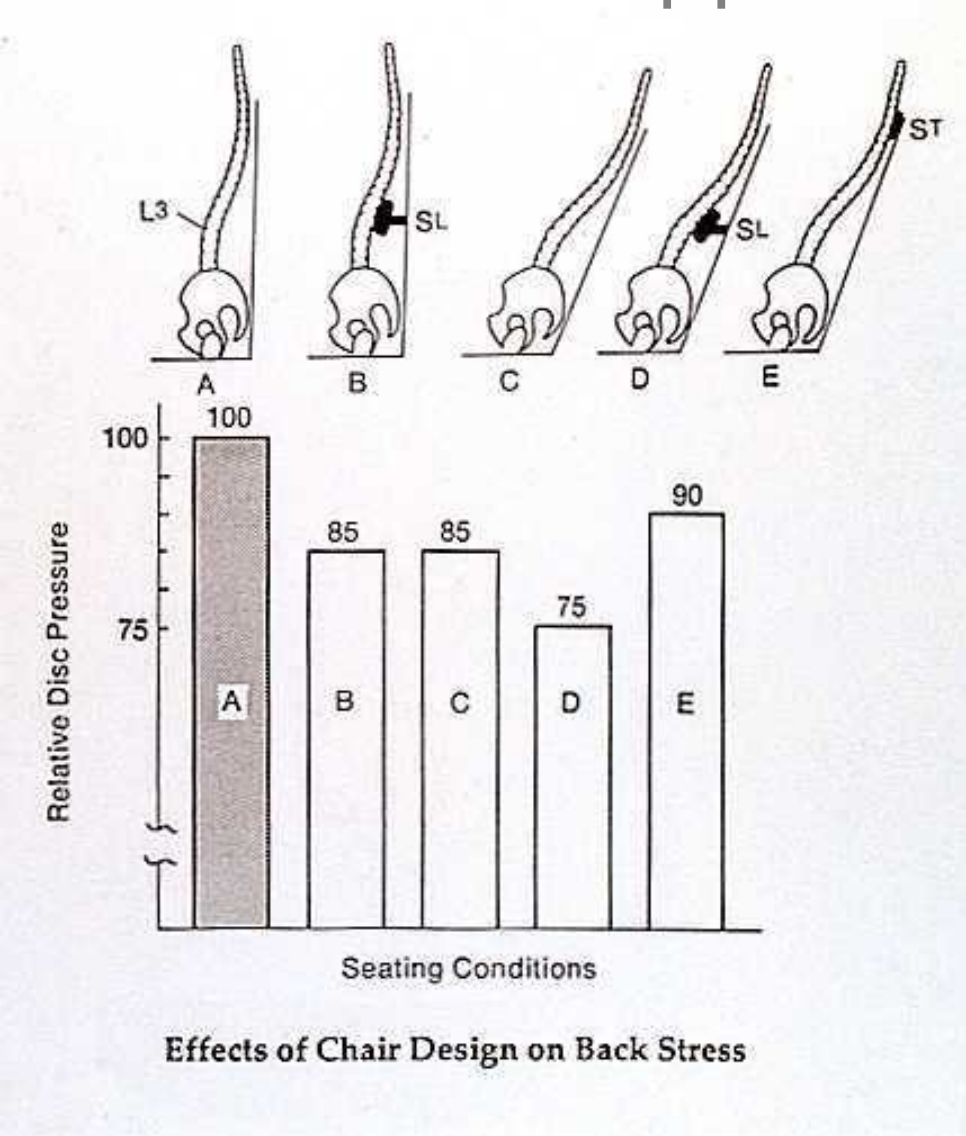
Office Ergonomics

Disc Pressure and Posture



Office Ergonomics

Disc Pressure and Support Location



Effects of Chair Design on Back Stress

Office Ergonomics

Adjustable Chair Information

- Labeling chair features
- Arm rests
- Education

Office Ergonomics

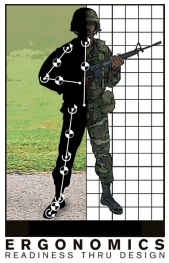
Retro-Fitting Chair Solutions

- Lumbar Support

Office Ergonomics

Retro-Fitting Chair Solutions

- Lumbar
  - Roll



Office Ergonomics

Components

- Foot Rest

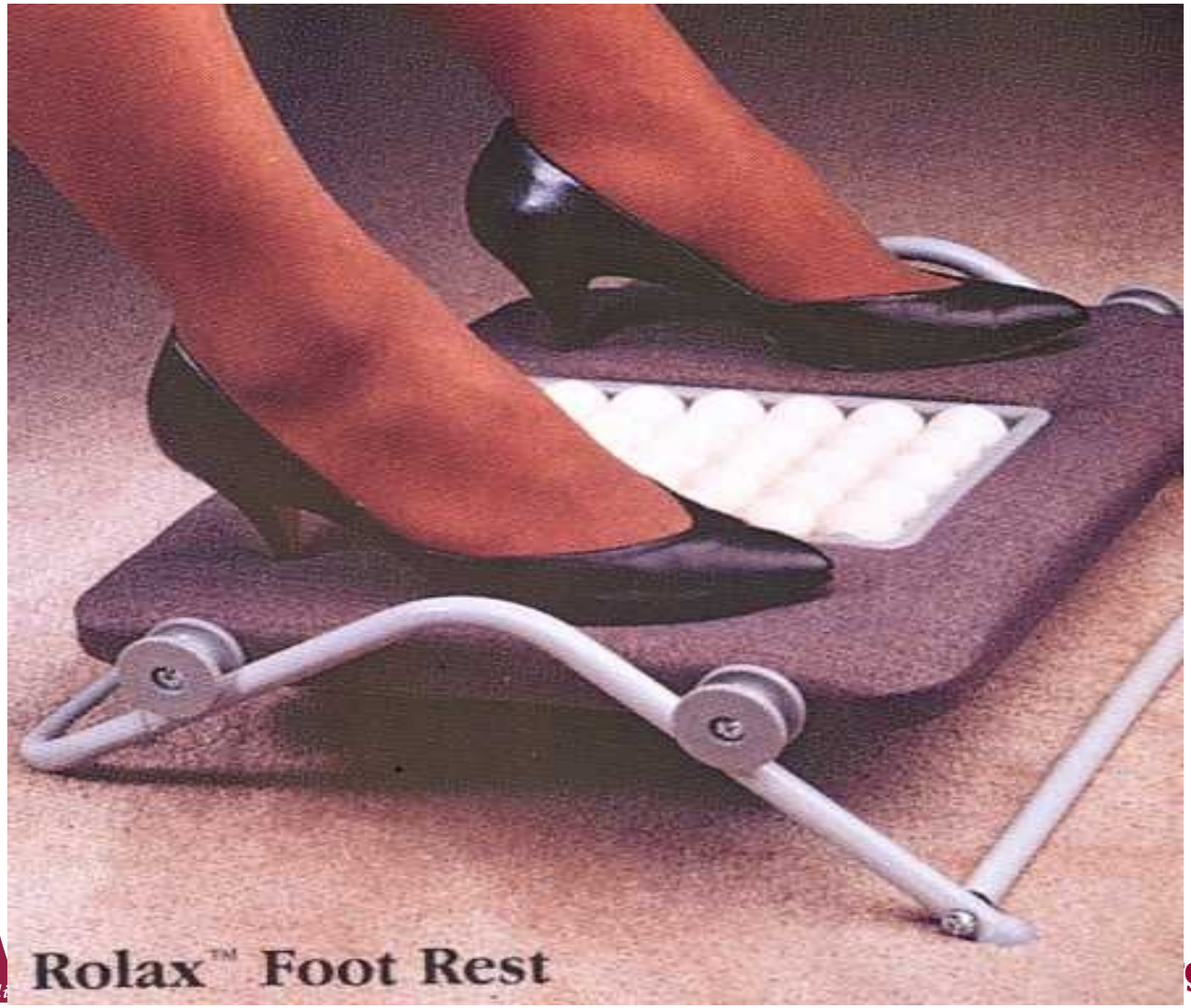
- Supports the feet
- Helps back posture
- Decreases contact stress

Office Ergonomics

Foot Rest Example

Office Ergonomics

Foot Rest Example



Office Ergonomics

Components - Monitor

Office Ergonomics

Components – Monitor

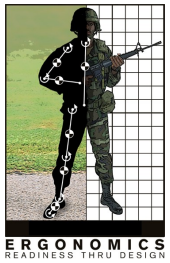
- Screen Height
- Screen Position
- Screen Angle
  - Visual angle

Office Ergonomics

Components - Monitor

Office Ergonomics

Components - Monitor



Office Ergonomics

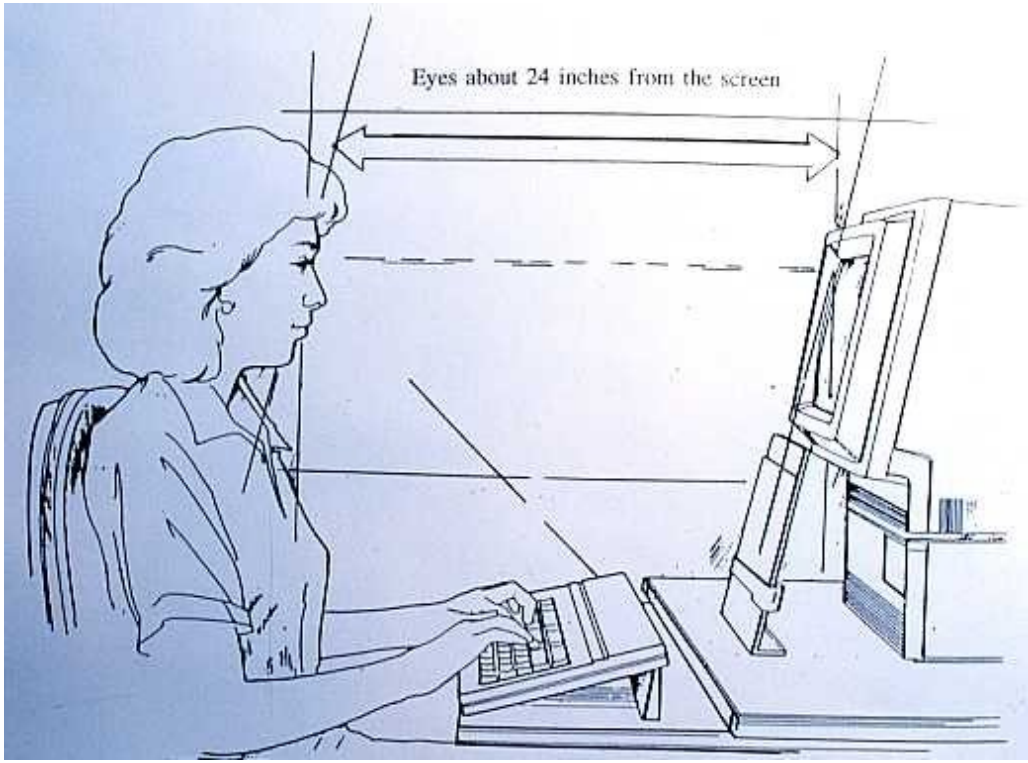
Vision Issues

- Vision problems from VDT use are the most common physical complaint
- Approximately 10 million people suffer from VDT related vision problems

Office Ergonomics

Vision Issues

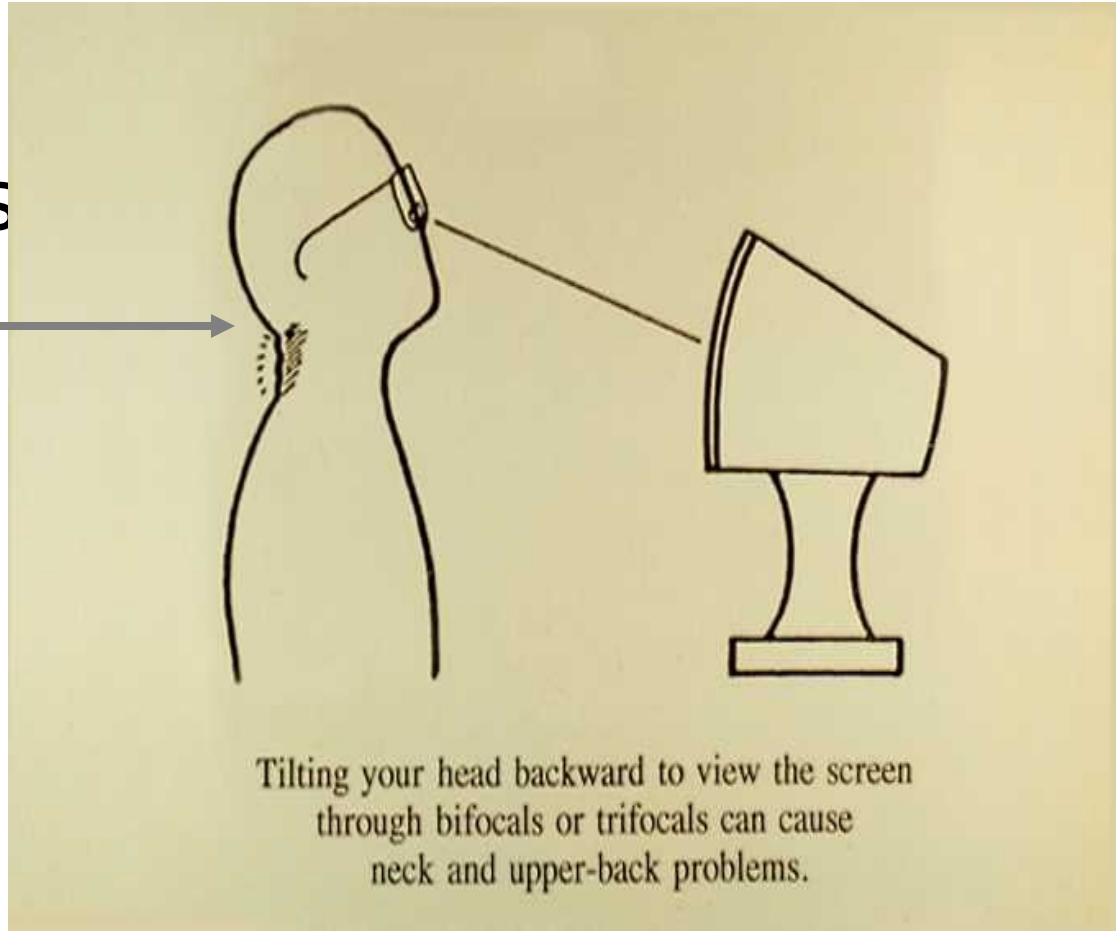
- Monitor Distance:
- 12, 18, 20 to 30 ???
- General Guideline is 18 – 30 inches



Office Ergonomics

Vision Issues

- Bifocals Glass
  - Posture effects
- Focal Length



Office Ergonomics

Components - Illumination

Office Ergonomics

Components - Illumination

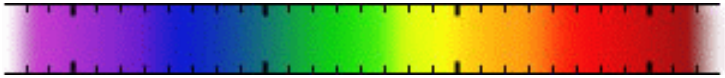
- Issues

- Proper Amount
- Correct Location
- Type of Light

Office Ergonomics

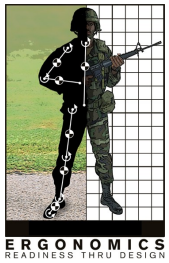
Components - Illumination

Different Types of Source Lighting



Fluorescent

Full Spectrum



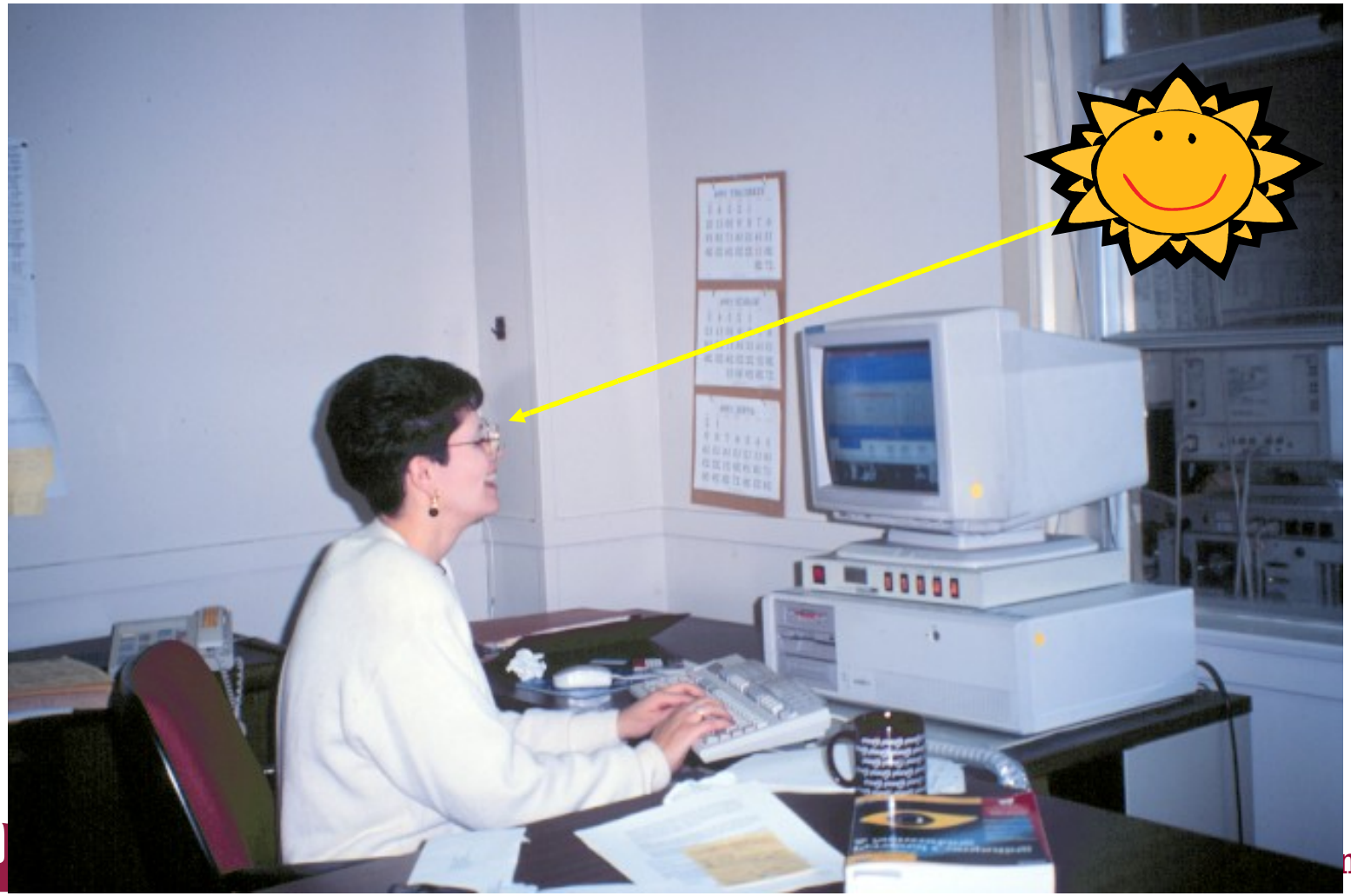
Office Ergonomics

Illumination Issues

- Amount and Location
- Direct Glare
- Indirect Glare

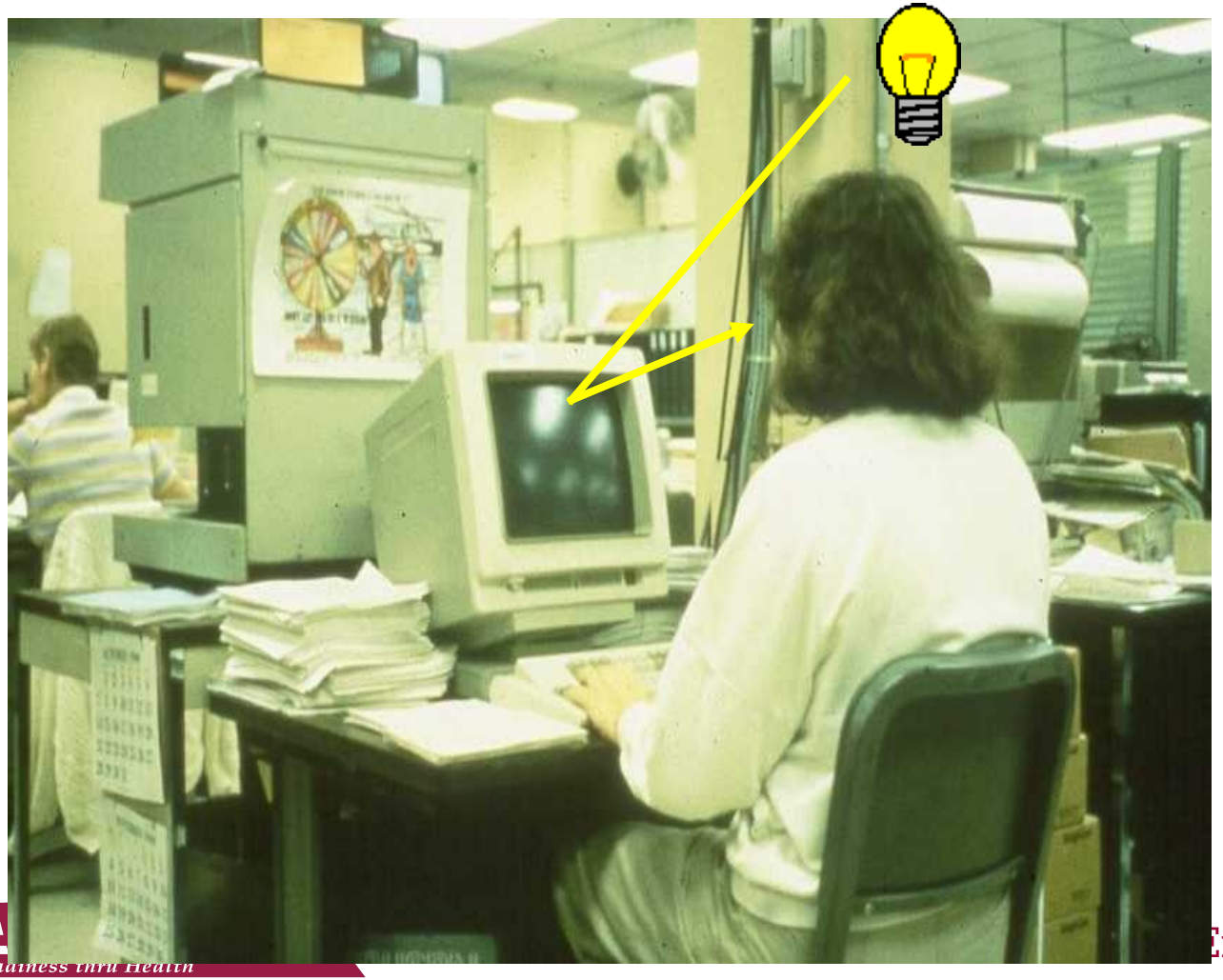
Office Ergonomics

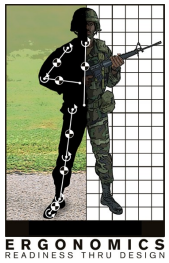
Illumination Issues- Direct Glare



Office Ergonomics

Illumination Issues- Indirect Glare





Office Ergonomics

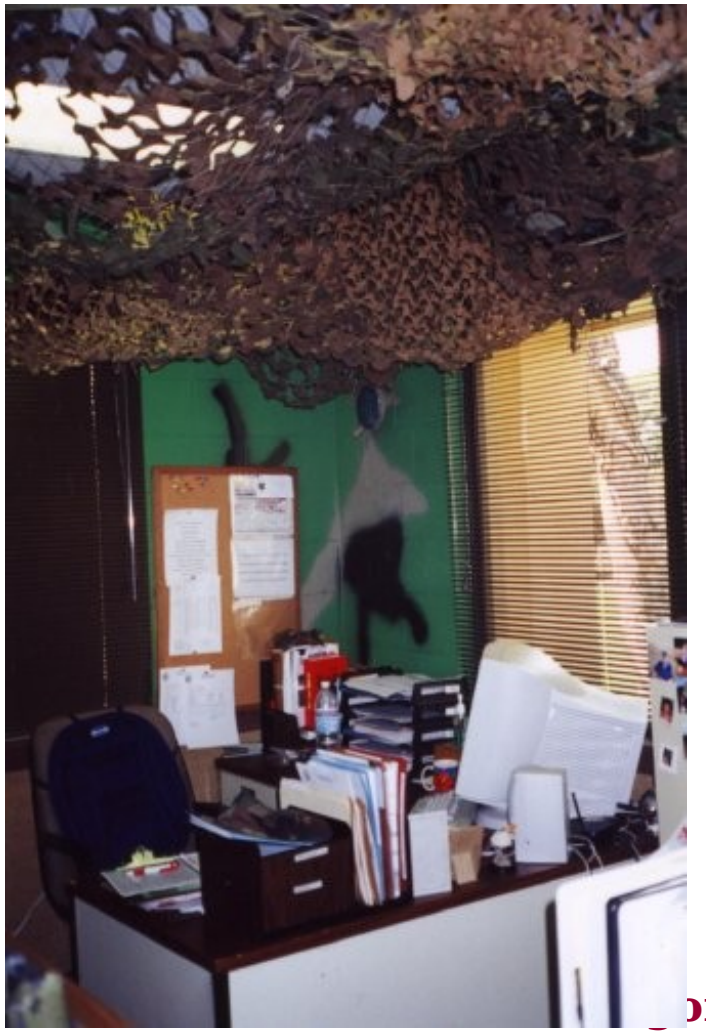
Illumination Issues

- Glare Control
- Light Source
- Monitor and Body Position
- Baffles and Glare Screens

Office Ergonomics

Illumination Issues

- Glare Control
  - at
  - the Source



Office Ergonomics

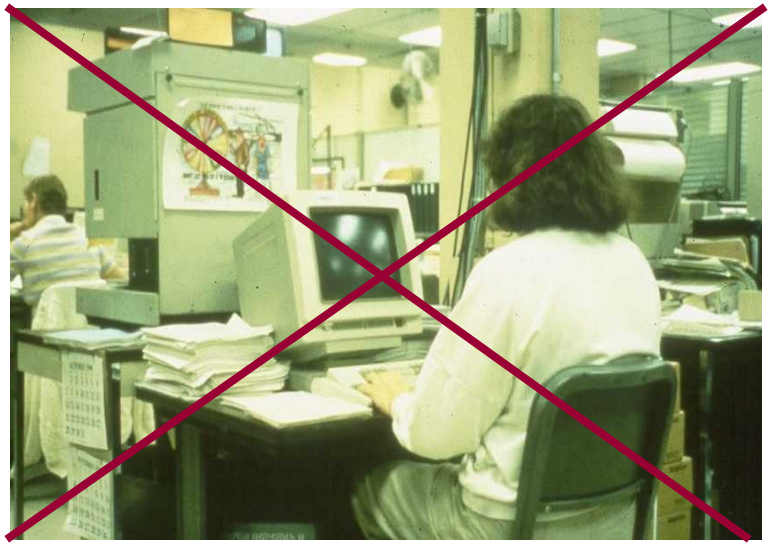
Illumination Issues

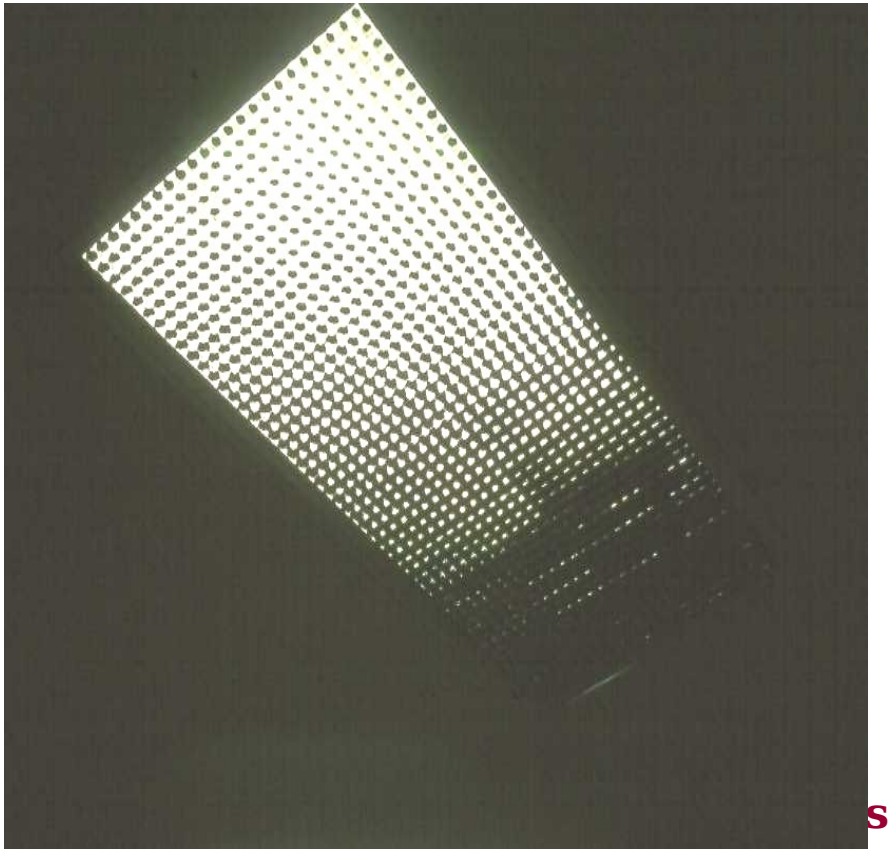
Glare Control by Monitor Location

Office Ergonomics

Illumination Issues

Glare Control with Baffles





Office Ergonomics

Illumination Issues

Glare Control - Baffles

“typical” fluorescent lights

lights with baffles

Office Ergonomics

Illumination Issues

Glare Control - Baffles

Office Ergonomics

Illumination Issues

Glare Screen

Office Ergonomics

Illumination Issues - Monitor Wraps

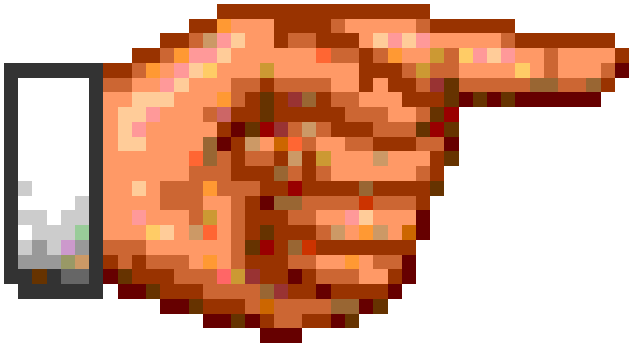
ERGONOMICS
READINESS THRU DESIGN

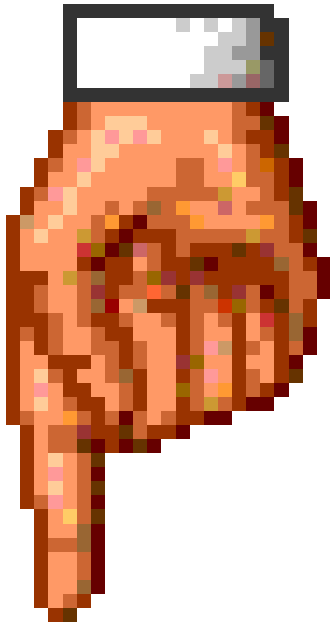
No More Please

USACHPPM
Readiness thru Health

Break Is Over

- Please come back in the room and have a seat.





Office Ergonomics

Components -The Document

- Where should the document be placed in
- order to decrease awkward neck posture?

Office Ergonomics

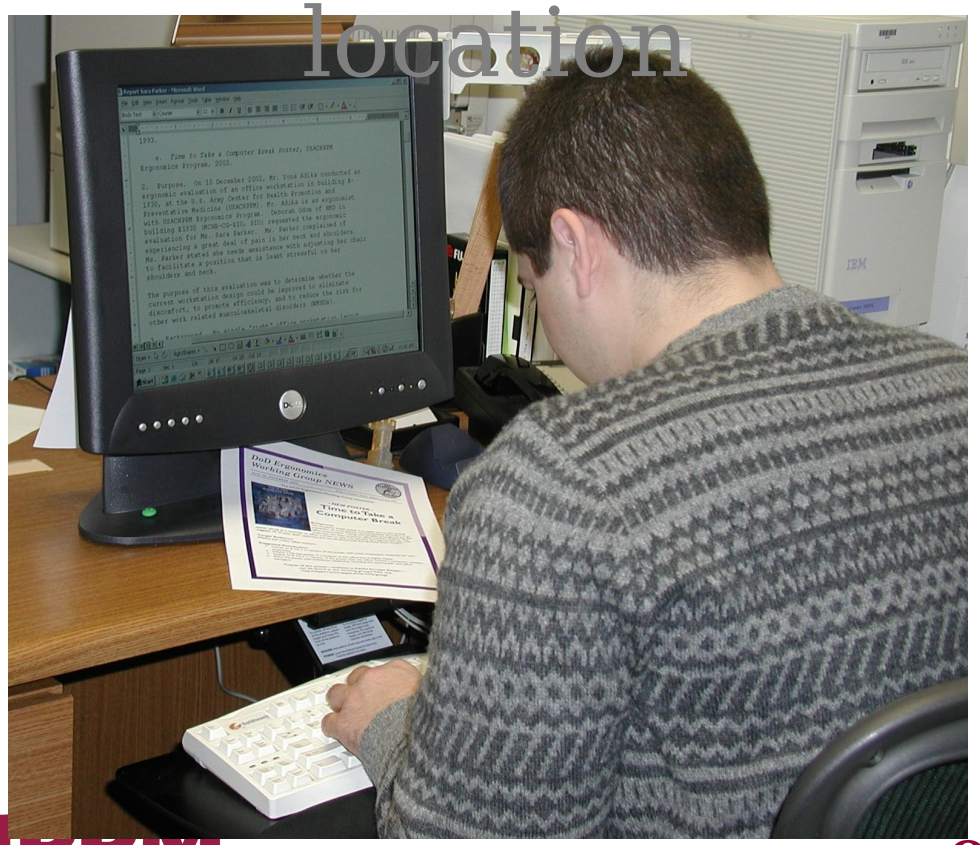
Components – Document Holder

- No document holder-Bad document location

Office Ergonomics

Components – Document Holder

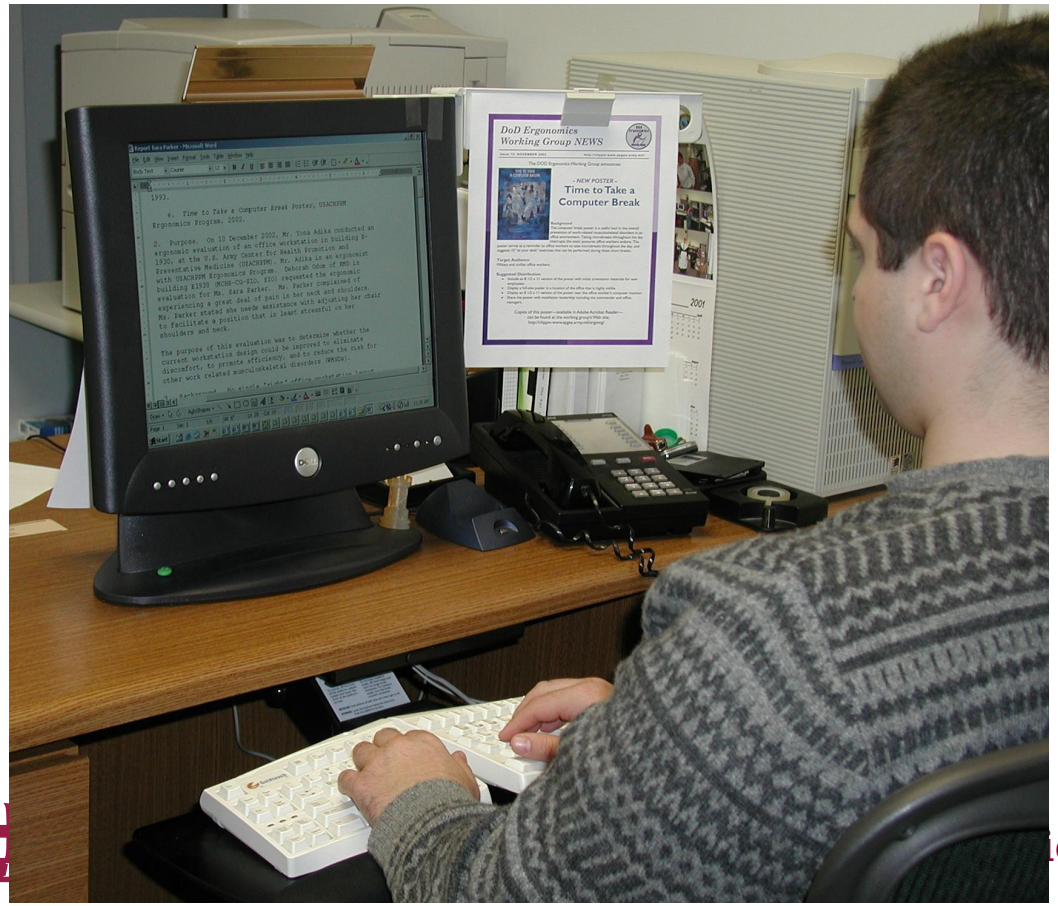
No document holder-Bad document location



Office Ergonomics

Components- Document Holder

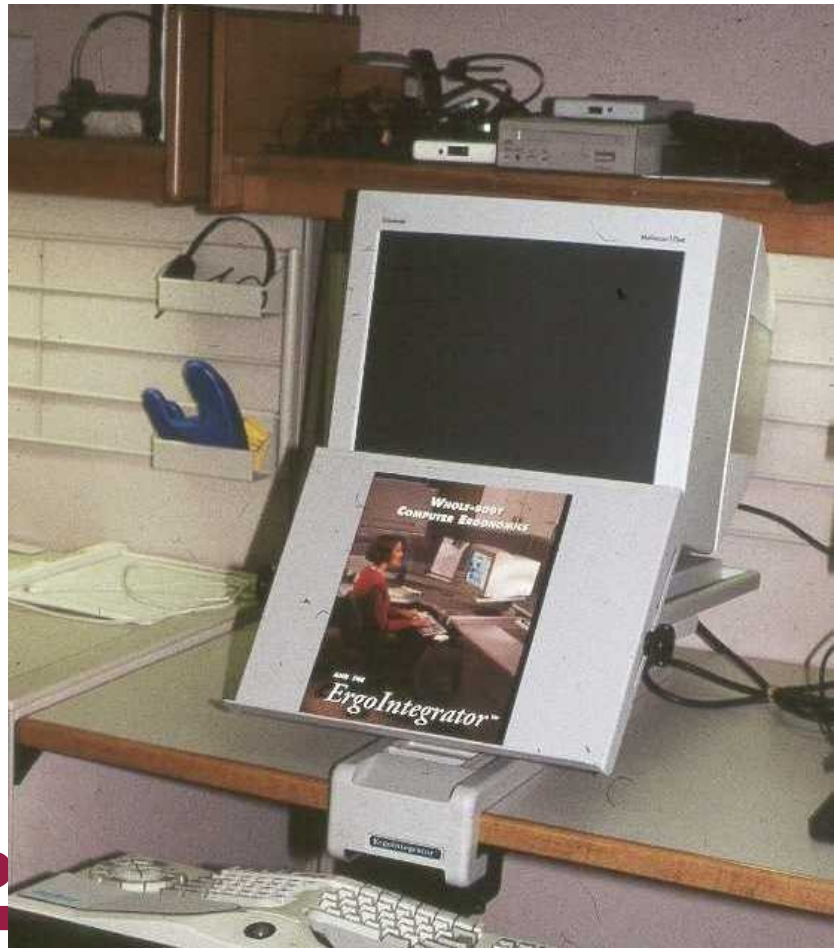
Good Document Location



Office Ergonomics

Components- Document Holder

Good document location



Office Ergonomics

Components – The Keyboard

USACHPPM
Readiness thru Health

Office Ergonomics

Office Ergonomics

Keyboard History

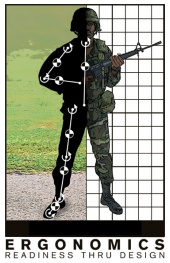
- **1868 Sholes Demo**
- **1870 Writing Ball**
- **1884 Hammond**
- **1887 Kosmopolit**
- **1889 International**
- **1890 Victoria**
- **1907 Junior**
- **1923 Franklin**
- **1937 Varityper**

•Typewriter History

•Click on an item from the list to view that model.

USACHPPM

Next Slide



Office Ergonomics:

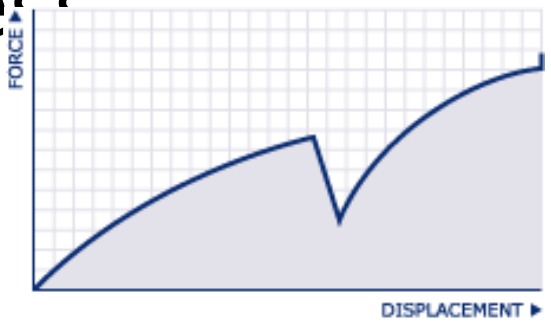
The Modern Keyboard

- 1926 Klockenberg commented on the problems associated with typing because of typewriter keyboard layouts
- What WMSD risk factors are associated with using modern keyboards?

Office Ergonomics

Keyboard Risk Factors

- Posture/Position
- Force
- Duration
- Repetition
- Compression/Contact Stress



Office Ergonomics Alternative Keyboards

- NIOSH (DHHS) Publication Number 97-148 states inconclusive evidence
- Experts agree that a more neutral posture does occur

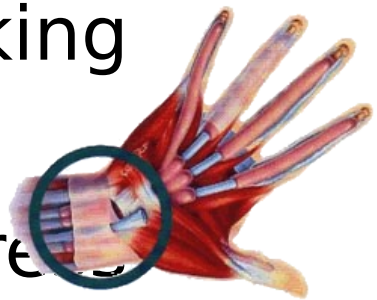
Office Ergonomics

Alternative Keyboard Examples

Office Ergonomics

Keyboard Solutions

- Wrist Rests
  - Meant for resting not parking
  - Improper use still causes
  - compression/contact stress

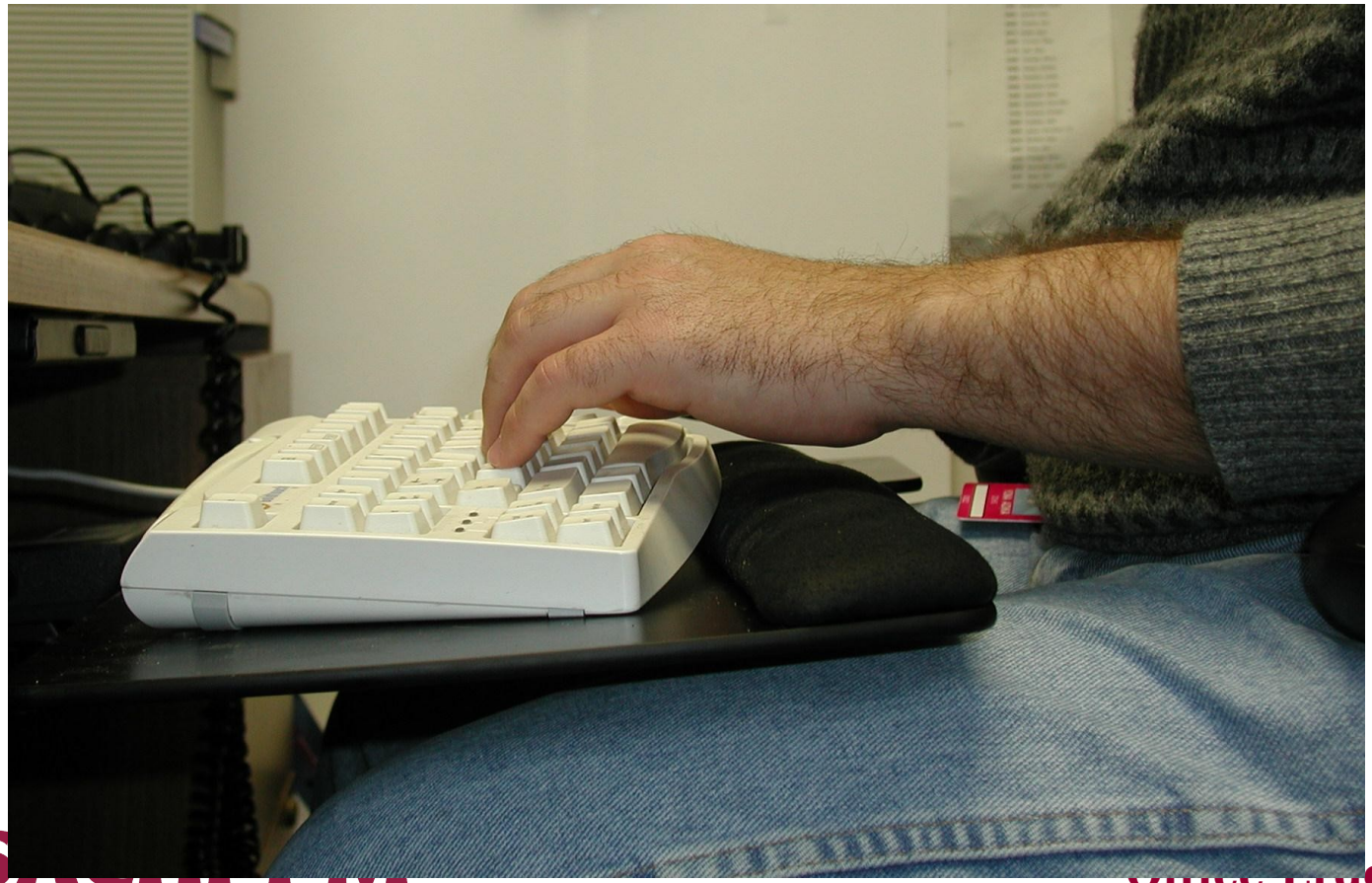


Office Ergonomics

Improper typing technique
Misuse of wrist rest

Office Ergonomics

Proper use of wrist rest



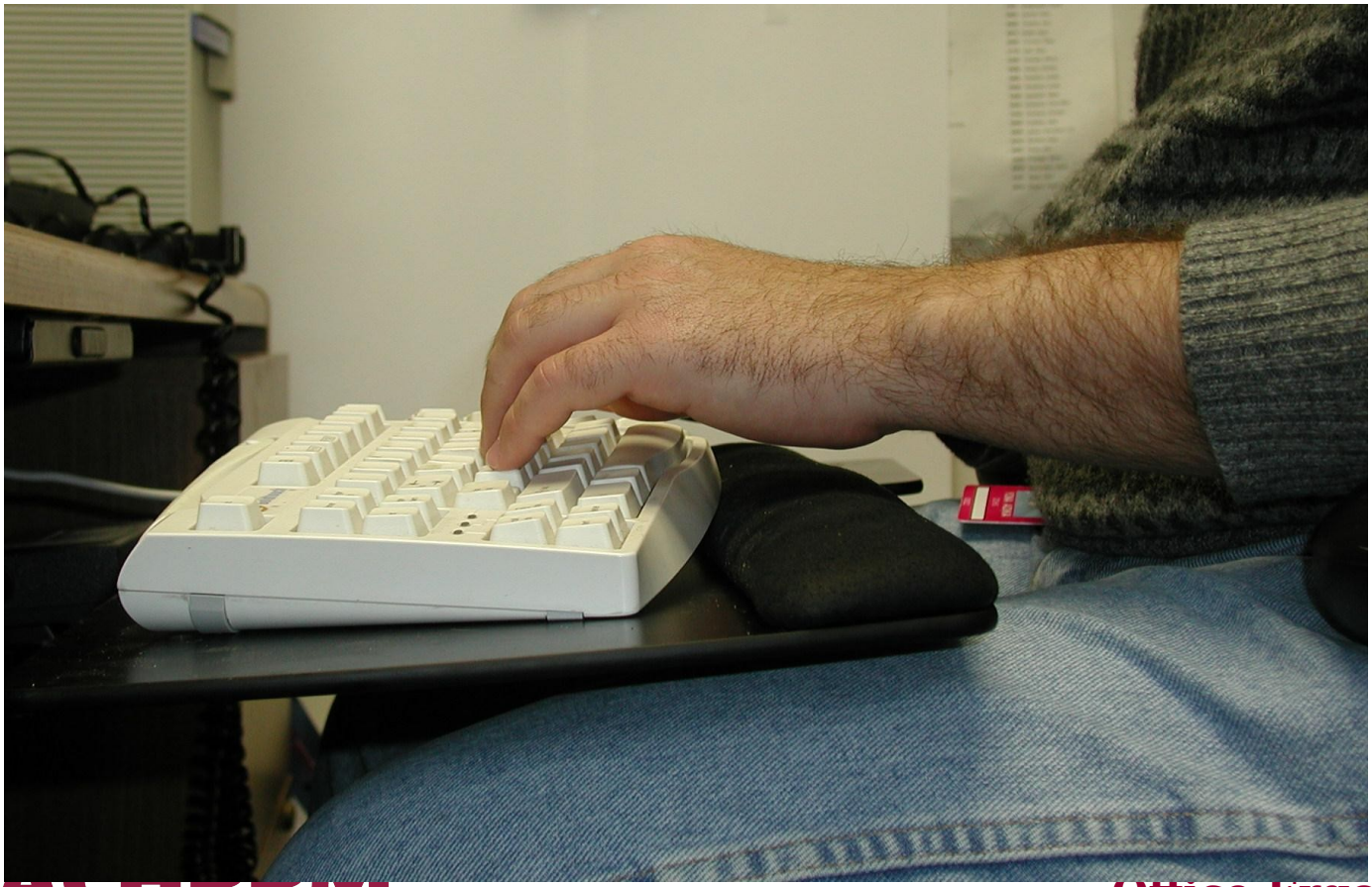
Office Ergonomics

Proper use of wrist rest

Microbreak-use wrist rest

Office Ergonomics

Proper Use of Wrist Rest



Office Ergonomics

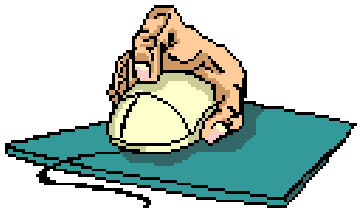
Other Keyboard Solutions

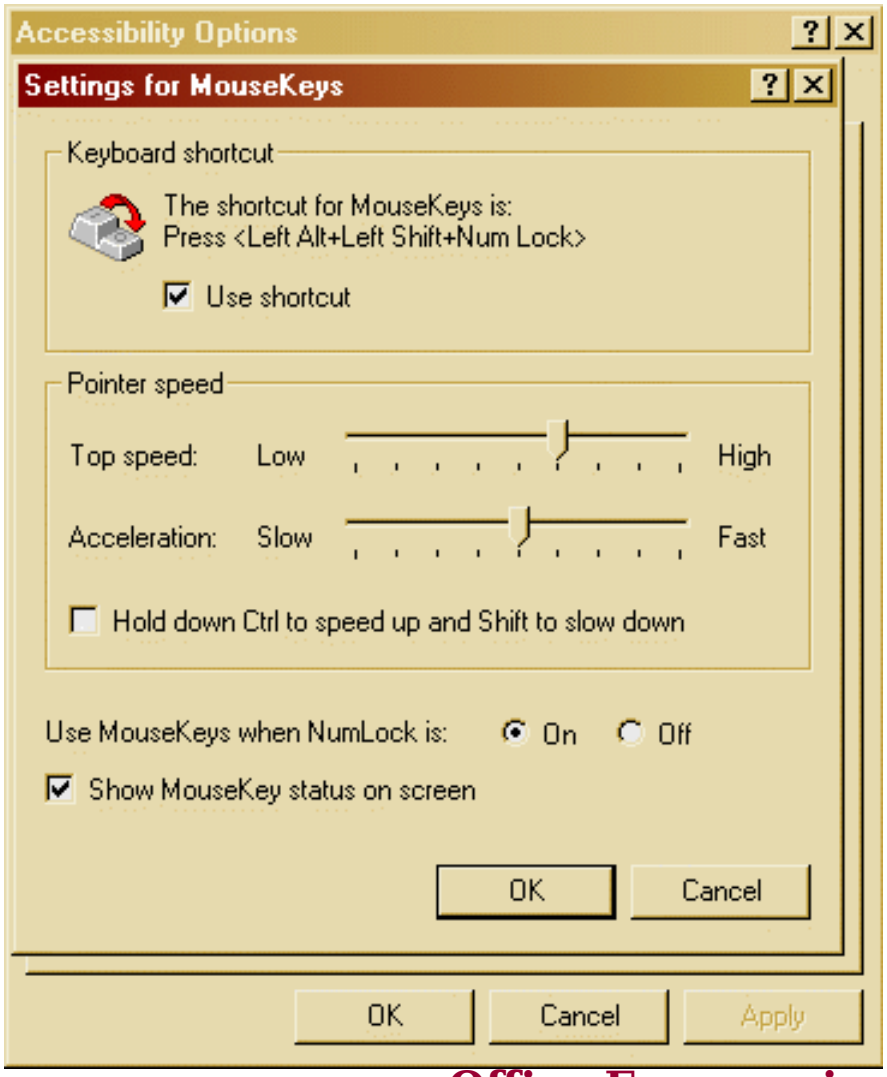
- Automatic reminder software
  - Decreases duration
- Voice-activated computers

Office Ergonomics

The Mouse

- Many new designs on the market
- User preference
- Tactile deficiencies





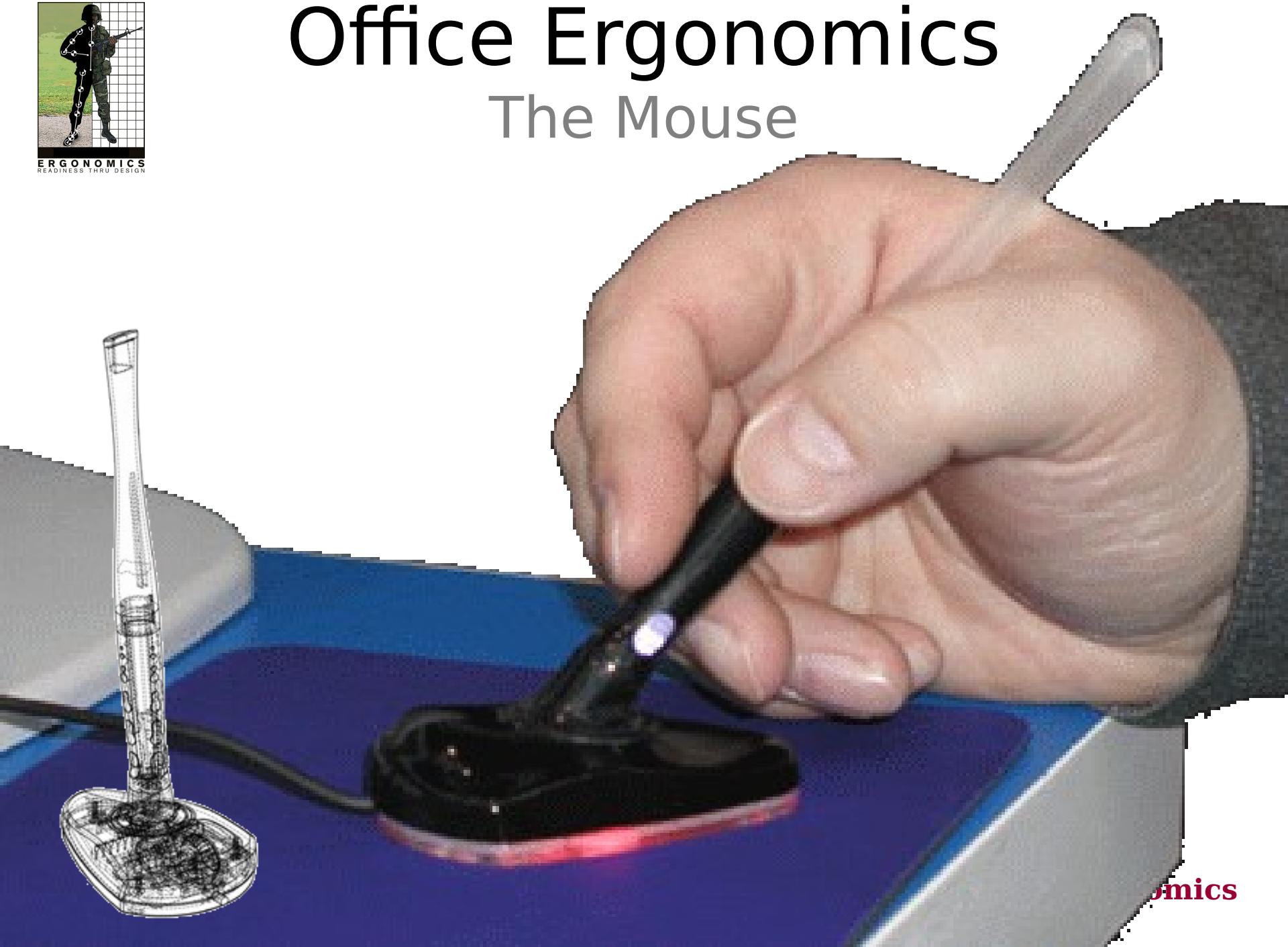
USACHPPM
Readiness thru Health

Office Ergonomics

The Mouse

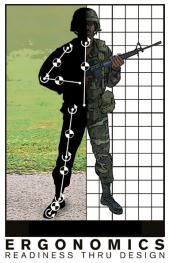
Office Ergonomics

The Mouse



Office Ergonomics

The Trackballs



Office Ergonomics

Component Placement

- Where should the keyboard and mouse be located?

Office Ergonomics

Improper Mouse Location

Office Ergonomics

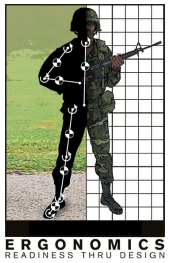
Proper Mouse Location

Office Ergonomics

Proper Keyboard and Mouse Location

Office Ergonomics

Proper Mouse Location Quick Fix



Office Ergonomics

Articulating Keyboard Platforms

- Positions the keyboard and mouse at the proper height and depth
- Easily adjustable to fit different sized workers

Office Ergonomics

Articulating Keyboard Platform

Office Ergonomics

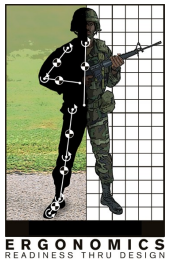
Articulating Keyboard Platform

Office Ergonomics

Articulating Keyboard Platform

Office Ergonomics

The Telephone



Office Ergonomics

The Telephone

- Awkward posture, compression or contact stress in the neck and shoulder region
- Evaluate duration of phone usage and suggest headset if appropriate

Office Ergonomics

The Telephone

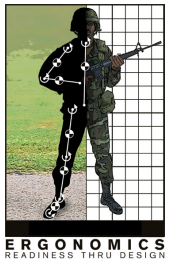
Office Ergonomics

Laptops

- Awkward postures
- Docking stations
- Potential Solutions
  - Mouse
  - Keyboard
  - Monitor stand

Office Ergonomics Evaluations

- Determine the level of detail necessary
  - Exact measurements
  - General observations
- Office Evaluation Checklist
  - Task analysis section



Office Ergonomics

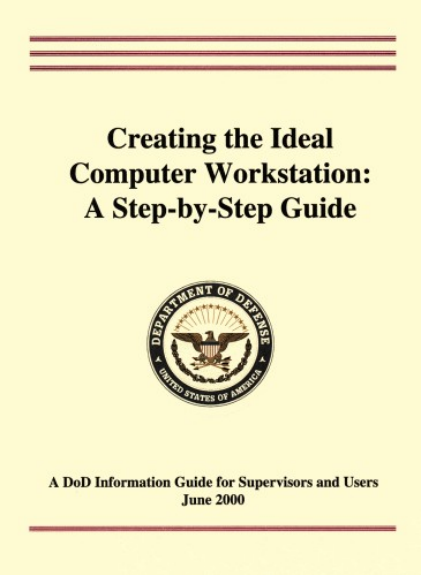
Aspects to Observe or Measure

- Desk height
- Desk thickness
- Leg clearance
- Elbow rest height
- Popliteal Height
- Eye height
- Thigh clearance
- Lumbar support
- Arm rests
- Leg clearance

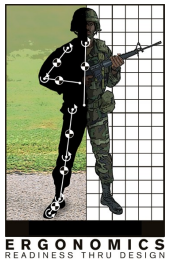
Office Ergonomics

Helpful Material

Creating the Ideal Computer Workstation: A Step-by-Step Guide



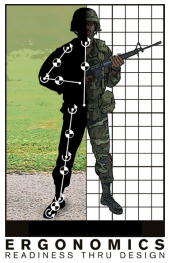
- Troubleshooting chart in binder
- Example office evaluation report



Office Ergonomics

Summary

- The Work Related Musculoskeletal Disorder risk factors that exist in the office
- Potential solutions

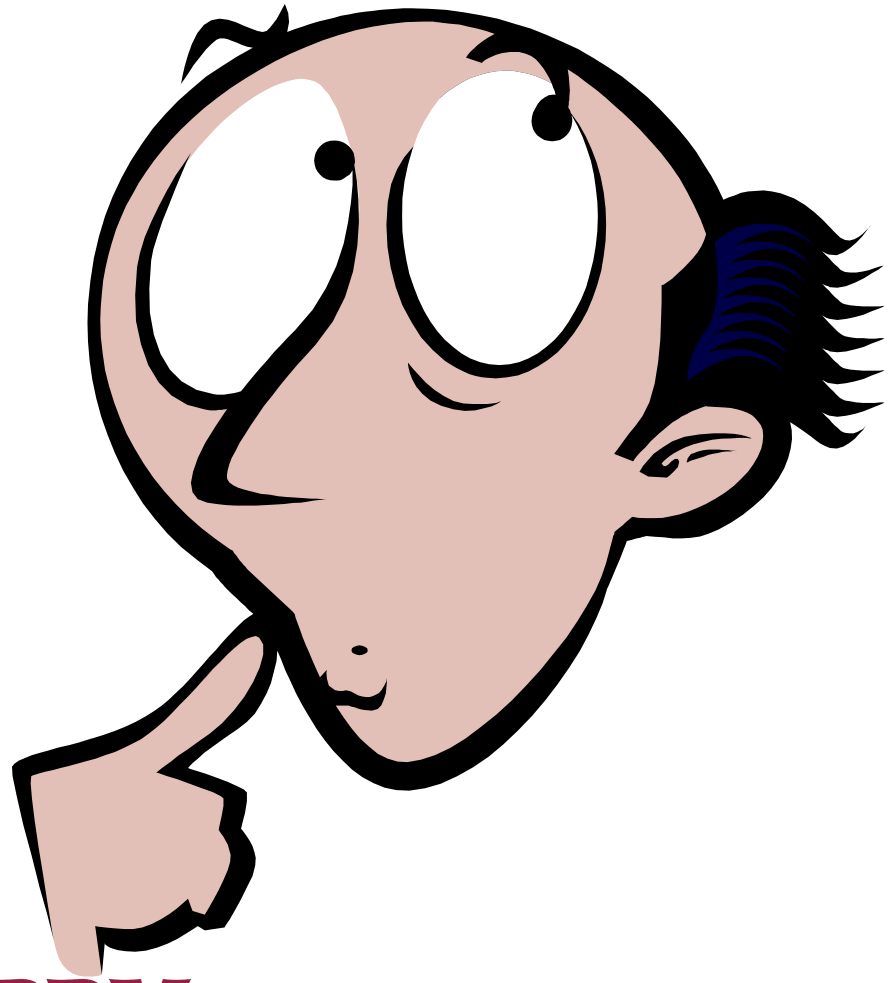


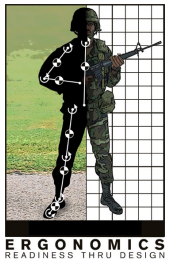
Office Ergonomics

You be the Judge

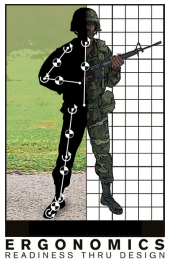
- Critically review various options for the office environment.
- Remember what you learned in “Snake Oil” talk.
- Would you recommend the product?
- How will this product help?
- What will it help?
- What are the potential risks?
- Who should not use the product?

ANY QUESTIONS?





Key Steps for Implementing an Ergonomics Program



DOD/ES Policy Memo

- Policy mandate Feb 97

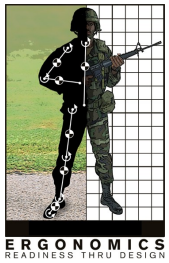
- **Ms. Goodman (DOD/ES) memo**
  - **REQUIRED development of ergo programs**
  - **Ergonomics = a health and safety issue**

- **Decision to publish policy based on injury and illness data for military and civilian workers**

- **Established ergonomic requirements and procedures for the control of WMSDs in DOD**

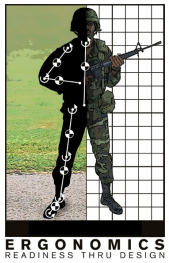
DOD Policy

- Policy requirements published in DODI 6055.1 (1998)
- Website:
  - **http://www.dtic.mil/whs/directives**



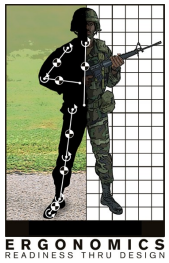
Army Policy

- Ergonomics Program Policy Memo (ASA/ILE ESOH), August, 1998
- Ergonomics Policy Letter (Secretary of Army), July, 2000
- AR 40-5 (Safety)



Ergonomics Program Critical Elements

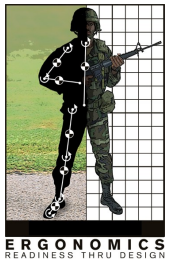
- Written Plan
- Workplace Analysis
- Hazard Prevention and Control
- Health Care Management
- Education and Training
- Program Evaluation and Review
- Material Acquisition



Workplace Analysis

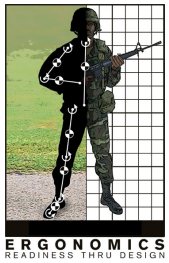
- Determine if problem exists and select **high risk** areas by:

- Systematic Passive Surveillance
- Systematic Active Surveillance



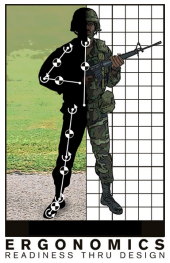
Hazard Prevention and Control

- **Control exposure to WMSDs using the following intervention methods:**
  - **Process Elimination**
  - **Engineering Controls**
  - **Substitution**
  - **Work Practices**
  - **Administrative Controls**



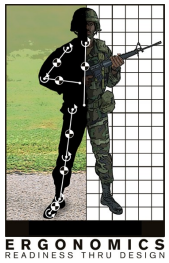
From DA-PAM

- Others who need training:
- All personnel who are potentially exposed to WMSDs *and their:*
  - Supervisors, Managers
- Engineers and maintenance personnel
- Installation Safety and Health personnel

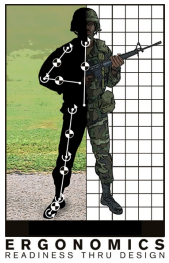


Education and Training: All Levels

- Provide training during orientation, annually, and if reassigned:
  - Demonstration of proper use and care of, and proper operating procedures for tools and equipment
  - Use of safety equipment
  - Safe and proper work procedure

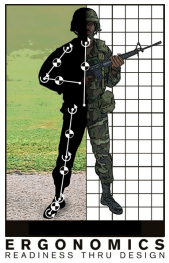


Roles and Responsibilities



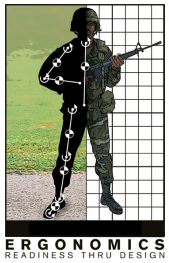
Installation Commander

- Establish Ergonomics Subcommittee
- Integrates Ergonomics
- Approves ergonomics policy
- Supports Ergonomics Program
- Designates an Installation Ergonomics Officer (IEO)



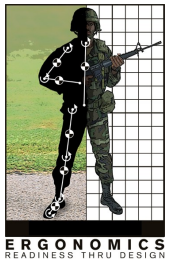
Installation Medical Authority (IMA)

- Helps choose members of Ergonomics Subcommittee
- Ensures written installation protocol



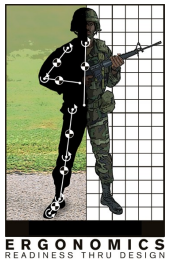
Installation Ergonomics Officer (IEO)

- Qualified health or safety professional
- Has at least 40 hours formal training
- Chairs the Ergonomics Subcommittee
- Develops and Implements installation ergonomics policy
- Ensures accurate record keeping and does program reviews
- Reports results



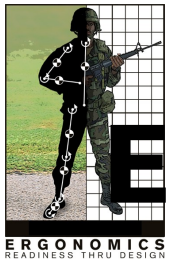
References

- DA-PAM – 40-21
  - Provides template for local regulation
  - Details the Critical Elements



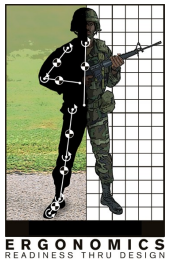
References

- **Tech Guide 220**
- Provides technical tools to do program requirements outlined in DA-PAM
  Flowcharts, Checklists, Step by Step Instruction
  - Booklet I: General Program Management
  - Booklet II: Worksite Analysis
  - Booklet III: Hazard Prevention and Control
  - Booklet IV: Healthcare Management
  - Booklet V: (Education and Training)
  - Booklet VI: (Program Assessment: Coming soon)



What USACHPPM Ergonomics Program Has to Offer:

- **Evaluation Services**
  - **Industrial**
  - **Office**
- **Applied Research Services**
- **Training Services**
  - **40 Hour Courses**
  - **1 Hour Courses**
  - **Tailored Courses**
- **Pamphlets, Brochures, Videos, Desktop Consultations, Posters, etc.**



How to Reach Us:

CDR USACHPPM

ATTN: MCHB-TS-OER

5158 Blackhawk Rd.

APG, MD 21010-5403

Ph: 410-436-3928

DSN: 584-3928

http://chppm-www.apgea.army.mil/ergopgm/ergohome.htm